

# Performance of Antenatal Diagnosis to detect Postnatal Coarctation of the Aorta

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## ABSTRACT

The aim of this study is to assess the postnatal outcomes of fetuses diagnosed with potential aortic coarctation.

**Material and methods:** the records of all neonates with antenatal suspicion of coarctation of the aorta were reviewed retrospectively for clinical, echocardiographic data and treatment.

**Results:** Among 78 fetuses diagnosed with abnormal asymmetric ventricles, 35 (44.9%) developed coarctation of the aorta, 42 did not (52.5%) and 2 had hypoplastic left heart (2.6%).

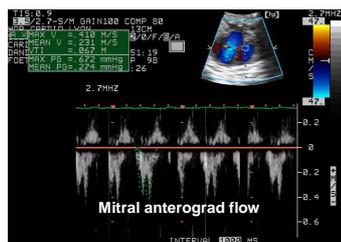
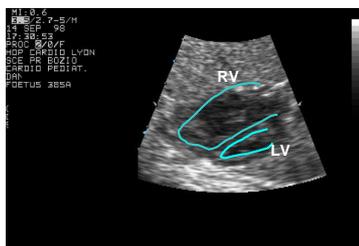
All patients were hospitalized from birth until closure of the ductus arteriosus or Crafoord surgery. The antenatal RV to LV ratio was 1.74 in patients with coarctation of the aorta compared to 1.39 in those without (p= 0.018), and the pulmonary artery to ascending aorta ratio was respectively 1.69 versus 1.30 (p= 0.0001). The frequency of left superior vena cava was not different between patients with and without postnatal coarctation (29.7 versus 25%). The 2 cases with hypoplastic left heart died postnatally. All the other patient were asymptomatic, and had no symptom of heart failure. Mean postnatal LV diameter was 15.7mm, ascending aorta 7.2mm. None of the patients required prostaglandin infusion or preoperative mechanical ventilation. Crafoord operation was performed at median age of 11.5 days. Median hospital stay was 21.4days for operated patients.

**Conclusion:** The performance of antenatal diagnosis to detect postnatal coarctation of the aorta remains low. However RV to LV and PA to AO ratios may help to ameliorate specificity. Despite high rate of false positive, antenatal diagnosis allows to avoid postnatal acute heart failure and improve early prognosis.

## BACKGROUND

Antenatal diagnosis may contribute to improve postnatal prognosis in patients with significant Coarctation of the Aorta (COAO). Asymmetric ventricles with LV < RV is the main criteria for diagnosis, leading however to high frequency of false positive.

Specific criteria to predict postnatal COAO are still lacking. The aim of this study is to assess the postnatal outcomes of fetuses diagnosed with potential COAO



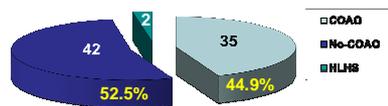
## METHODS

- Fetuses with antenatal suspicion of COAO on the basis of asymmetric ventricles (LV<RV)
- Retrospective review of clinical, echocardiographic data, treatment and outcomes.
- Comparison of 2 groups:
  - group COAO ( postnatal COAO confirmed)
  - group No-COAO( postnatal COAO not confirmed)

## RESULTS

N= 78 fetuses with LV < RV

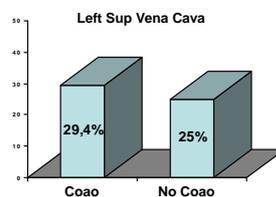
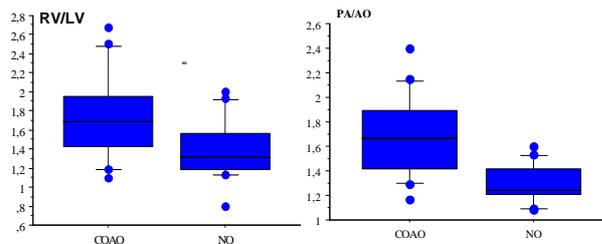
Neonatal hospitalization until closure of PDA



Post-natal COAO in 35 cases = 44.9%

Antenatal data	Total	COAO	No-COAO	p
LV (mm)	9.4±2.1	9.3±2.0	9.6±2.3	0.63
RV (mm)	14.3±3.6	15.7±4.0	12.9±2.6	0.02
RV/LV	1.6±0.4	1.7±0.5	1.4±0.3	0.018
PA (mm)	8.6±1.8	7.7 ±1.4	5.8 ±1.3	0.003
AAO (mm)	5.8 ±1.3	5.7 ±1.1	6.0 ±1.5	0.45
PA/AO	1.5 ±0.3	1.7 ±0.3	1.3 ±0.2	0.0001

Ao: ascending aorta, LV: left ventricle, PA: pulmonary artery trunk, RV: right ventricle



## Post-natal Outcomes

- Mean LV diameter : 15.7mm
- Mean AAO diameter : 7.2mm
- Death : 2 (post-natal diagnosis : HLHS)
- Crafoord : 35 cases
  - at median age : 11.5days
  - median hospital stay: 21.4days

## CONCLUSION

The performance of antenatal diagnosis to detect postnatal coarctation of the aorta remains low. However RV to LV and PA to AO ratios may help to enhance specificity